5/8-Port Industrial Fast Ethernet Switch

ISW-500/ISW-800

User's Manual

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WEEE Warning

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Revision

PLANET Industrial Fast Ethernet Switch User's Manual

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1. INTRODUCTION

The 5/8-Port 10/100BaseTX Industrial Fast Ethernet Switch is a cost- effective solution and meets the high reliability requirements demanded by industrial applications. It provides the redundant power inputs that prevent the power failure.

1.1 Packet Contents

Check the contents of your package for following parts:

- Industrial Fast Ethernet Switch x1
- DIN-Rail kit (screwed on the switch)
- Wall-mount kit (wall-mount plate with 6 screws)
- CD-ROM user's manual x1

If any of these are missing or damaged, please contact your dealer immediately, if possible, retain the carton including the original packing material, and use them against to repack the product in case there is a need to return it to us for repair.

1.2 How to Use This Manual

This User Manual is structured as follows:

Chapter 2, **HARDWARE INSTALLATION**

The chapter explains the functions of the Switch and how to physically install the Switch.

Chapter 3, **NETWORK INSTALLATION**

The chapter explains how to install the Switch in the Network.

Chapter 4, **TROUBLE SHOOTING**

The chapter explains how to trouble shooting of the Switch.

Chapter 5, **APPENDIX A Networking Connection**

The chapter contains cable information of the Switch.

1.3 Product Feature

Hardware Feature:

- Comply with IEEE 802.3, IEEE 802.3u
- CSMA/CD Protocol
- RJ-45 Port support auto MDI/MDI-X function
- Wide-range redundant power design
- Store and forward switch architecture
- DIN rail and 3-way wall mount design

Industrial Conformance:

- 12~48V DC, redundant power with polarity reverse protect function and connective removable terminal block for master and slave power
- 0 to 60 Degree C operation temperature
- IP-30 Aluminum case
- EMI complies with FCC Class A, CE EN6100-4-2, CE EN6100-4-3, CE EN6100-4-4, CE EN6100-4-5 and CE EN6100-4-6
- Stability testing with IEC60068-2-32(Free fall), IEC60068-2-27(Shock) and IEC60068-2-6(Vibration)

1.4 Product Specification

Model	ISW-500	ISW-800
Standard	IEEE 802.3, IEEE 802.3u, 10/100Base-TX	
10/100Mbps TP	5	8
Protocol	CSMA/CD	
Switching Architecture	Store and forward	
Transfer Rate	144,880 pps for Ethernet port and 1448,800 pps for Fast Ethernet port	
MAC address	1K	2K
Memory Buffer	512Kbits	1Mbit
Network Cable	10Base-T : 2-pair UTP/STP Cat 3, 4, 5 cable 100Base-TX: 2-pair UTP/STP Cat. 5 cable 10Base-T: EIA/TIA-568 100-ohm (100m)	
LED	Per port : Link/Activity (Green), Full duplex/Collision (Green) Per unit: Power 2 (Green), Power 1 (Green), Power (Green)	
Backplane	1Gbps	1.6Gbps
Packet throughput ability	0.74Mpps@64bytes (5TX)	1.19Mpps@64bytes (8TX)
Power Supply	12~48 VDC, Redundant power with polarity reverse protection function	
Power Consumption	2.8 Watts / 9.5BTU	4.6 Watts / 15BTU
Installation	Provide DIN rail kit and wall mount plate for 3-way installation	
Operating environment	0~60 Degree C, 5%~90%RH (Non-condensing)	
Storage environment	-40~85 Degree C, 5%~90%RH (Non-condensing)	
Dimension (W x D x H)	54 × 105 × 155 mm	
Emission	FCC Class A, CE mark	
Stability testing	IEC60068-2-32(Free fall), IEC60068-2-27(Shock), IEC60068-2-6(Vibration)	

2. HARDWARE INSTALLATION

This section describes the functionalities of the Switch's components and guides how to install it on the rack or mount to the wall. Basic knowledge of networking is assumed. Please read this chapter completely before continuing.

2.1 Product Description

The PLANET entry level Industrial Ethernet Switch is industrially hardened Ethernet switch specifically designed to operate reliably in electrically harsh and climatically demanding environments.utilization.

2.1.1 Product Overview

The switch provides a high level of immunity to electromagnetic interference and heavy electrical surges typical of environments found on plant floors or in curb side traffic control cabinets. An operating temperature range of -0 to +60 Degree C coupled with hazardous location certification (Class 1 Division 2) allows the switch to be placed in almost any location.

The switch is packaged in a compact, IP-30 standard aluminum that allows either DIN or panel mounting for efficient use of cabinet space. The switch provides an integrated power supply with a wide range of voltages (12-48VDC) for worldwide operability or dual-redundant, reversible polarity, 24VDC and 48VDC power supply inputs for high availability applications requiring dual or backup power inputs.

2.1.2 Switch Front Panel

Figure 2-1 shows the front panel of the switch.

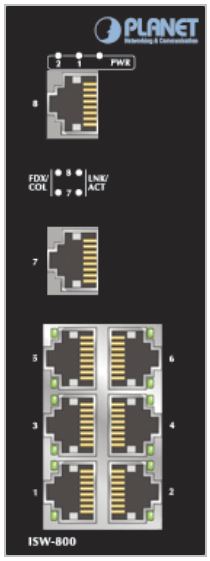


Figure 2-1 ISW-800 Front Panel

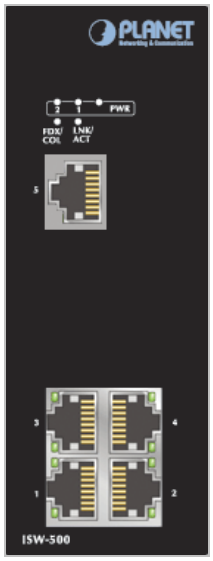


Figure 2-2 ISW-500 Front Panel

2.1.3 LED Indications

LED	Status	Meaning
Power	Green	When the industrial switch has power input s the LED will light on
	Off	No any power inputs
Power 1	Green	Power on
	Off	No power inputs
Power 2	Green	Power on
	Off	No power inputs
LNK/ACT (port 7&8 of ISW-800, port 5 of ISW-500)	Green	The port is linking with its link partner
	Blinks	The port is transmitting or receiving packets from the TX device.
	Off	No device attached
FDX/COL (port 7&8 of ISW-800, port 5 of ISW-500)	Orange	The port is operating in full-duplex mode.
	Blinks	Collision of Packets occurs in the port.
	Off	The port in half-duplex mode or no device attached
LED Indicator (port 1 ~ 6 of ISW-800, port 1 ~ 4 of ISW-500)	Orange	The port is operating in full-duplex mode.
	Blinking (Orange)	Collision of Packets occurs.
	Off	The port is in half-duplex mode or no device is attached.
	Green	A network device is detected.
	Blinking (Green)	The port is transmitting or receiving packets from the TX device.
	Off	No device is attached.

2.1.4 Switch Bottom Panel

The bottom panel of the 5/8-Port 10/100BaseTX Industrial Switch consist one terminal block connector within two DC power inputs and one DC IN power jack for extra AC/DC power adapter. Figure 2-3 shows the bottom panel of the switch.

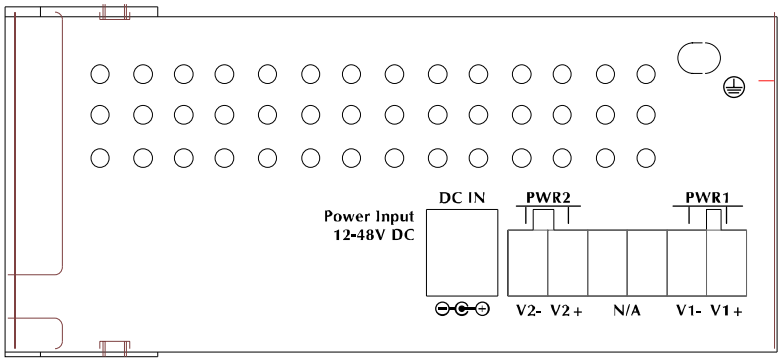
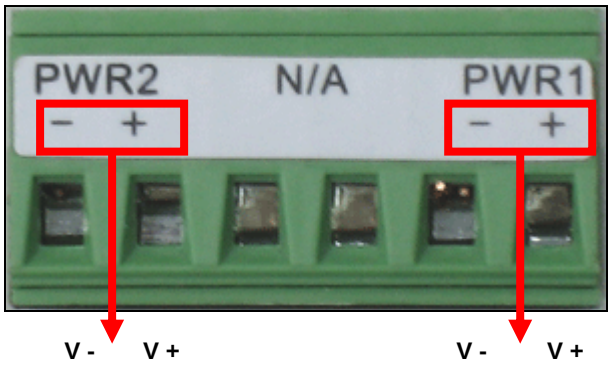


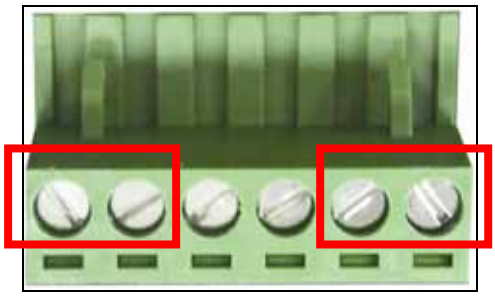
Figure 2-3 ISW-500/800 Bottom Panel.

2.1.5 Wiring the Power Inputs

Please follow below steps to insert the power wire.



1. Insert the positive and negative wires into the V+ and V- connector on the terminal block connector.



2. To tighten the wire-clamp screws for preventing the DC wires to loose.

Power Notice:

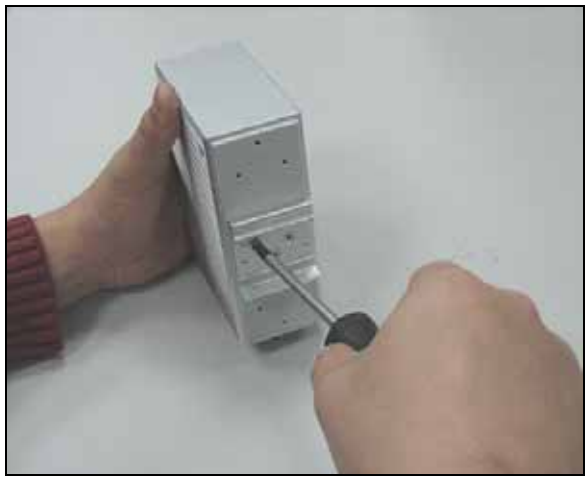
The wire range of terminal block is from 12~ 24 AWG.

2.2 Mounting Installation

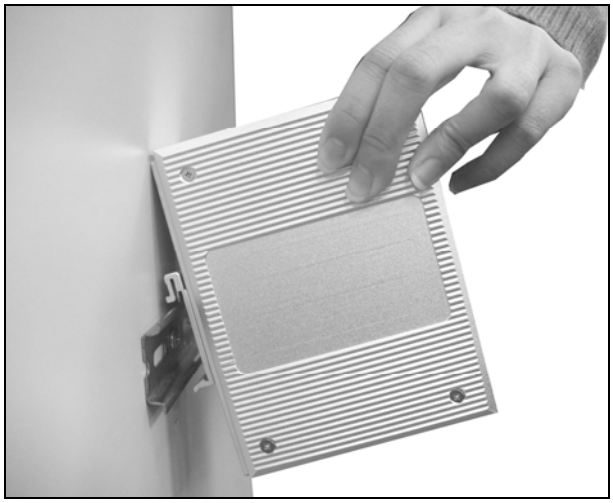
This section describes how to install the Ethernet Switch and make connections to it. Please read the following topics and perform the procedures in the order being presented.

2.2.1 DIN-Rail mounting

The DIN-Rail is screwed on the industrial switch when out of factory. If the DIN-Rail is not screwed on the industrial switch, please see the following figure to screw the DIN-Rail on the switch. To hang the industrial switch, follow the below steps:



Step1: Insert the top of DIN-Rail into the track.



Step2: Lightly push the button of DIN-Rail into the track.

Step3: Check the DIN-Rail is tightly on the track.

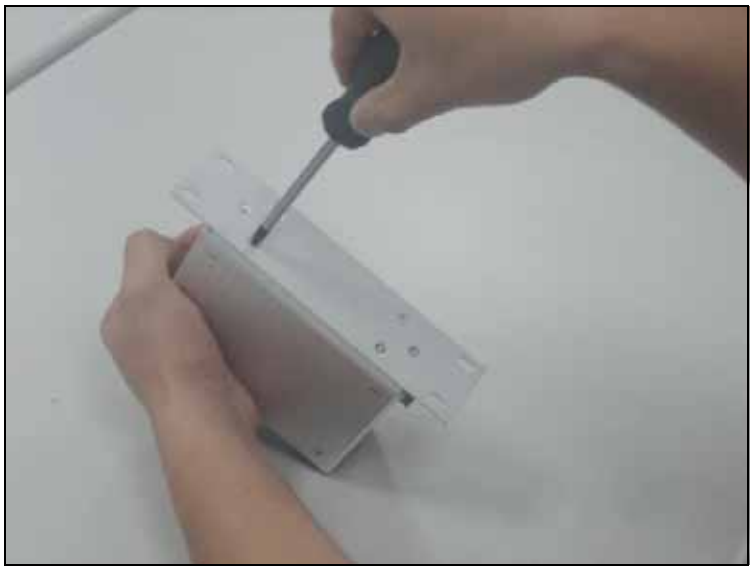
Step4: To remove the industrial switch from the track, reverse steps above.

2.2.2 Wall Mount Plate Mounting

To install the switch on the wall, please follows the instructions described below.

Step1: Remove the DIN-Rail from the industrial switch; loose the screws to remove the DIN-Rail.

Step2: Place the wall mount plate on the rear panel of the industrial switch.



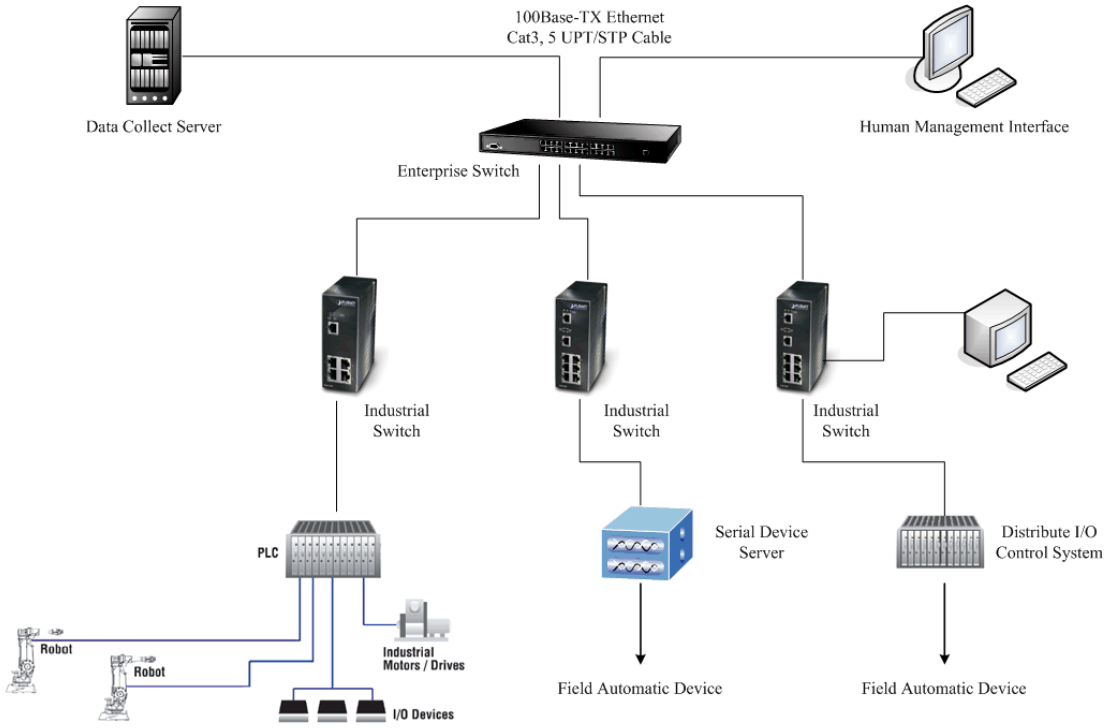
Step3: Use the screws to screw the wall mount plate on the industrial switch.

Step4: Use the hook holes at the corners of the wall mount plate to hang the industrial switch on the wall.

Step5: To remove the wall mount plate, reverse steps above.

3. NETWORK INSTALLATION

In this paragraph, we will describe how to install the 5/8-Port 10/100Base-TX Industrial Switch and the installation points for the attention.



Installation Steps

Step1: Unpack the Industrial switch.

Step2: Check the DIN-Rail is screwed on the Industrial switch. (Please refer to DIN-Rail Mounting section for DIN-Rail installation If the DIN-Rail is not screwed on the Industrial switch). If you want to wall mount the Industrial switch, then please refer to Wall Mount Plate Mounting section for wall mount plate installation.

Step3: To hang the Industrial switch on the DIN-Rail track or wall, please refer to the Mounting Installation section.

Step4: Power on the Industrial switch. (Please refer to the Wiring the Power Inputs section for power input) The power LED on the Industrial switch will light up. Please refer to the LED Indicators section for meaning of LED lights.

Step5: Prepare the twisted-pair, straight through Category 5 cable for Ethernet connection.

Step6: Insert one side of Category 5 cables into the Industrial switch Ethernet port (RJ-45 port) and another side of category 5 cables to the network devices' Ethernet port (RJ-45 port), ex: switch, Pc or Server. The UTP port (RJ-45) LED on the Industrial switch will light up when the cable connected with the network device. Please refer to the LED Indicators section for LED light meaning.

Notice:

Be sure the connected network devices support MDI/MDI-X. If it does not support then use the crossover category 5 Cable.

Step7: When all connections are all set and LED lights all show in normal, the installation is complete.

4. TROUBLESHOOTING

This section is intended to help you solve the most common problems on the industrial Ethernet switch.

4.1 Incorrect connections

The switch port can auto detect straight or crossover cable when you link switch with other Ethernet device. For the RJ-45 connector should use correct UTP or STP cable, 10/100Mbps port use 2-pairs twisted cable. If the RJ-45 connector is not correct pin on right position then the link will fail. For fiber connection, please notice that fiber cable mode and fiber module should be match.

4.1.1 Faulty or loose cables

Look for loose or obviously faulty connections. If they appear to be OK, make sure the connections are snug. IF that does not correct the problem, try a different cable.

4.1.2 Non-standard cables

Non-standard and miss-wired cables may cause numerous network collisions and other network problem, and can seriously impair network performance. A category 5-cable tester is a recommended tool for every 100Base-T network installation.

4.1.3 Improper Network Topologies

It is important to make sure that you have a valid network topology. Common topology faults include excessive cable length and too many repeaters (hubs) between end nodes. In addition, you should make sure that your network topology contains no data path loops. Between any two ends nodes, there should be only one active cabling path at any time. Data path loops will cause broadcast storms that will severely impact your network performance.

4.1.4 Incorrect Power Input

Verify that you are using the right power cord/adapter (DC 12-48V), please don't use the power adapter with DC output bigger than 48V, or it will burn this converter down.

4.2 Diagnosing LED Indicators

The Switch can be easily monitored through panel indicators to assist in identifying problems, which describes common problems you may encounter and where you can find possible solutions.
IF the power indicator does turn on when the power cord is plugged in, you may have a problem with

power outlet, or power cord. However, if the Switch powers off after running for a while check for loose power connections, power losses or surges at power outlet. IF you still cannot resolve the problem, contact your local dealer for assistance.

4.2.1 Cabling

RJ-45 ports: use unshielded twisted-pair (UTP) or shield twisted-pair (STP) cable for RJ-45 connections: 100Ω Category 3, 4 or 5 Cable for 10Mbps connections or 100Ω Category 5 cable for 100Mbps connections. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet).

Diagnosing LED Indicators: the Switch can be easily monitored through panel indicators to assist in identifying problems, which describes common problems you may encounter and where you can find possible solutions.

IF the power indicator does not turn on when the power cord is plugged in, you may have a problem with power cord. Than check for loose power connections, power losses or surges at power outlet. IF you still cannot resolve the problem, contact your local dealer for assistance.

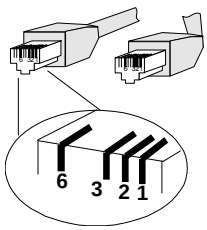
If the Industrial switch LED indicators are normal and the connected cables are correct and the packets still cannot transmit. Please check your system's Ethernet devices' configuration or status.

Appendix A Networking Connection

A.1 Switch‘s RJ-45 Pin Assignments

Contact	MDI	MDI-X
1	1 (TX +)	3
2	2 (TX -)	6
3	3 (RX +)	1
6	6 (RX -)	2
4, 5, 7, 8	Not used	Not used

A.2 RJ-45 cable pin assignment



There are 8 wires on a standard UTP/STP cable and each wire is color-coded. The following shows the pin allocation and color of straight cable and crossover cable connection:

Figure A-1: Straight-Through and Crossover Cable

Please make sure your connected cables are with same pin assignment and color as above picture before deploying the cables into your network.

CE